

Project 08S232
Annual Report – December 2006
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**DINOSAUR NATIONAL MONUMENT
COOPERATIVE AGREEMENT**

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INTRODUCTION - This report covers the activities conducted by Upper Colorado Environmental Plant Center, for the Dinosaur National Monument Plant Materials Agreement in 2006. The agreement was initiated in September of 1996 and was amended in August 1997. A new agreement was developed in 2002. These agreements involve collecting and increasing five grass species native to Dinosaur National Monument. One grass seed field was removed so that the agreement now involves four grasses. These grasses will be used for restoration and to prevent non-indigenous weedy plants from invading. No personnel from Dinosaur National Monument came to the plant center in 2006. Seed was harvested from all seed fields in 2006.

TARGETED SPECIES OF GRASS

Common Name	Number	Scientific Name (Old)
Alkali sacaton	9070954	<i>Sporobolus airoides</i>
Bluebunch wheatgrass	9070952	<i>Psuedoroegneria spicata ssp. spicata</i> (<i>Agropyron spicatum</i>)
Great basin wildrye	9070951	<i>Leymus cinereus</i> (<i>Elymus cinereus</i>)
Indian ricegrass	9070953	<i>Oryzopsis hymenoides</i>
Salina wildrye	(not collected)	<i>Leymus salinus ssp. salinus</i> (<i>Elymus salinus</i>)
Sand dropseed	(not collected)	<i>Sporobolus cryptandrus</i>
Western wheatgrass	9070955	<i>Pascopyron smithii</i> (<i>Agropyron smithii</i>)

In 2002 an additional species was added to the targeted list:

Squirreltail	(not collected)	<i>Elymus elymoides</i> (<i>Sitanion hystrix</i>)
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SEED COLLECTION AND CONDITIONING INFORMATION

INTRODUCTION - No additional seed was collected from Dinosaur National Monument for seed production at the plant center in 2006.

SEED PRODUCTION

INTRODUCTION - Seed fields were planted on November 5 and 6, 1997 and one additional field was added on July 20, 1998. In addition, one seed field (western wheatgrass) was removed in 1999, reducing the number of seed fields to four. Two seed fields (Indian ricegrass and alkali sacaton) were interseeded in 1999, to improve stands. An additional planting of bluebunch wheatgrass was planted in 2001 due to the poor appearance of the field and no seed production in 2001. The original planting of bluebunch wheatgrass was removed after harvest in 2005. Table 1 lists the seed from Dinosaur National Monument stored at the plant center. The following updates the seed fields through 2006.

1. Indian ricegrass - November 5, 1997 - planted 8 rows (0.24 acre) - field 4 - planted at rate of about 30 seeds per foot of row - total seed lot (1.42 lb) used. Harvested light seed crop (52.0 g), September 8, 1998 - moderate to good stand November 20, 1998. Harvested July 14, 1999, produced 1.24 lb clean seed. Harvested July 3, 2000, produced 0.97 lb clean seed. Harvested July 9, 2001, produced 0.69 lb clean seed. Harvested July 2, 2002, produced 3.6 lb clean seed. Harvested July 11, 2003, produced 8.0 lb of clean seed. Harvested July 8, 2004, produced 10.0 lb of clean seed. Harvested July 12, 2005, produced 12.0 lbs clean seed. Harvested July 3, 2006, produced 5.6 lbs of clean seed.
2. Bluebunch wheatgrass - November 5, 1997 - planted 8 rows (0.24 acre) - field 1 - planted at rate of about 30 seeds per foot of row - had few seed heads 1998, no harvest - good stand November 20, 1998. Harvested July 20, 1999, produced 16.5 lb clean seed. Harvested July 12, 2000, produced 1.4 lb clean seed. Not harvested in 2001. November 16, 2001, planted 6 rows (0.18 acre) at a rate of about 30 seeds per foot of row (0.35 lb planted), field 1, just south of original planting. New planting had good stand 2002, no harvest. Harvested old stand July 12, 2002, produced 300 g clean seed. Harvested both plantings July 16, 2003, produced 32.0 lb clean seed. Harvested July 14, 2004, produced 25.5 lb clean seed. Harvested July 20 and 21, 2005, produced 13.0 lbs of clean seed. The original 8 rows of this planting were removed after 2005 harvest due to off types. Field now 0.18 ac – Harvested July 5, 2006, produced 10.8 lbs of clean seed.
3. Western wheatgrass - November 6, 1997 - planted 8 rows (0.24 acre) - field 6A - planted at rate of about 20 seeds per foot of row, due to small quantity of seed and rhizomatous habit of species. Noted some off type plants in 1998, will rouge these out in 1999 - few seed heads 1998, no harvest - excellent stand with numerous sprouts November 20, 1998. Field had numerous off type plants 1999, field plowed.
4. Basin wildrye - November 6, 1997 - planted 8 rows (0.24 acre) - field 8A - planted at rate of about 30 seeds per foot of row. Few seed heads fall 1998, no harvest - excellent stand November 20, 1998. Harvested August 5, 1999, produced 29.0 lb clean seed. Harvested July 25, 2000, produced 2.4 lb of clean seed. Harvested July 17, 2001, produced 10.8 lb of clean seed. Harvested July 23, 2002, produces 25.0 lb. clean seed. Harvested July 25, 2003, produced 52.0 lb clean seed. Harvested July

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28, 2004, produced 43.0 lb of clean seed. Harvested August 4 and 5, 2005, produced 37.0 lbs of clean seed. Harvested July 24, 2006, produced 74.0 lb of clean seed.

5. Alkali sacaton - July 20, 1998 - planted 6 rows (0.18 acre) - field 4 - planted at a rate of about 30 seeds per foot of row - noted seedlings on September 2, 1998 - fair stand November 20, 1998. Harvested September 1, 1999, produced 99 g of clean seed. Harvested two seed crops in 2000 (July 12 and September 11), produced 2.4 lb clean seed. Harvested two seed crops in 2001 (July 18 and September 14) produced 13.0 lb of clean seed. Harvested two seed crops 2002 (July 17 and September 10) produced 6.2 lb clean seed. Harvested only once on August 4, 2003, produced 6.0 lb clean seed. Harvested two seed crops July 16 and September 10, 2004, produced 8.0 lb clean seed. Harvested August 9, 2005, produced 2.0 lb of clean seed. Harvested July 18, 2006, produced 88.0 g of clean seed.

SEED SHIPMENTS

No seed was provided to Dinosaur in 2006.

SUMMARY

1. A cooperative agreement between Dinosaur National Monument and Upper Colorado Environmental Plant Center was initiated in September of 1996 and amended in August of 1997. A new agreement was developed in 2002.
2. The agreement involved the collection, evaluation and increase of five grasses native to Dinosaur National Monument. Only four seed fields are now grown for seed production.
3. Seed fields were planted in November 1997 for four contract species and the final seed field (alkali sacaton) was added in July 1998.
4. The western wheatgrass seed field was plowed in 1999, due to numerous off type plants, which reduced the number of seed fields to four.
5. Two seed fields (Indian ricegrass and alkali sacaton) were interseeded in 1999, to improve stands.
6. A new planting of bluebunch wheatgrass was planted in 2001, and had a good stand in 2002, but was not harvested. The original planting did produce seed in 2002. Both plantings were harvested in 2003, 2004, and 2005. The original eight rows were removed after the 2005 harvest. The planting now has 0.18 ac.
7. No Dinosaur personnel came to the plant center in 2006.
8. Seed crops were harvested from all seed production fields in 2006.

Table 1. A listing of seed from Dinosaur National Monument by species and year of harvest stored at the plant center.

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SPECIES	YEAR	BULK	PLS
Alkali Sacaton	1999 harvest	99g	no test
	2000 2-harvests	2.40 lb	0.70 lb
	2001 " "	13.00 lb	1.50 lb
	2002 2-harvests	6.20 lb	4.50 lb
	2003 1-harvest	6.00 lb	2.40 lb
	2004-2 harvests	8.00 lb	2.26 lb
	2005-1 harvest	2.0 lb	0.08 lb
	2006-1 harvest	88.0g	no test
Basin wildrye	1997 (park collected)	10.69 lb	8.6 lb
	1999 harvest	29.00 lb	25.70 lb
	2000 "	5.50 lb	4.00 lb
	2001 "	10.80 lb	7.40 lb
	2002 "	25.00 lb	17.60 lb
	2003 "	52.00 lb	42.60 lb
	2004 "	43.00 lb	31.1 lb
	2005 "	37.0 lb	24.6 lb
	2006 "	74.0 lb	---
Bluebunch wheatgrass	1997 (park collected)	0.46 lb	no test
	1999 harvest lot 1	10.50 lb	8.40 lb
	lot 2	6.00 lb	3.60 lb
	2000 harvest	1.40 lb	0.80 lb
	2001 NO harvest	---	---
	2002 (old planting)	300g	215g
	2003 (both plantings)	32.00 lb	25.9 lb
	2004 (both plantings)	25.50 lb	21.62 lb
	2005 (both plantings)	13.0 lb	9.5 lb
	2006(2-planting only)	10.8 lb	---
Indian ricegrass	1997 (park collected)	8g	no test
	1999 harvest	1.24 lb	0.80 lb
	2000 "	0.97 lb	0.30 lb
	2001 "	0.95 lb	0.50 lb
	2002 "	3.60 lb	1.15 lb
	2003 "	8.00 lb	3.60 lb
	2004 "	10.00 lb	3.8 lb
	2005 "	12.0 lb	4.8 lb
	2006 "	5.6 lb	---